

**In the Claims:**

This listing of claims will replace all prior versions and listing of claims in the application.

**Claims**

29. (original) A method for preparing a pre-cast electrophoresis gel comprising:  
inserting at least one spacer into the top of a cassette for electrophoresis gels, the cassette comprising:  
a first planar wall member having inner and outer surfaces, top and bottom edges, and bottom edges and lateral edges;  
a second planar wall member having inner and outer surfaces, top and back edges, and lateral edges, wherein the first and second wall members are oriented generally parallel to each other and such that the inner wall of the first wall member is proximate to the inner wall of the second wall member;  
spacing means disposed between the inner walls of the first and second wall members and adapted to provide a space for an electrophoresis gel between the inner walls of the first and second wall members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member; and  
locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement;  
wherein the spacer comprises a protrusion projecting from the side of the spacer proximate the interior of the cassette, wherein such protrusion defines two wells within the interior of the cassette, and wherein one of the wells is larger than the other well;  
providing a gel-forming material into the interior of the cassette;  
allowing the gel-forming material to form a gel within the interior of the cassette;  
removing the spacer from the cassette; and

inserting a removable plug in the smaller well.

30. (Currently Amended) A cassette for holding a vertical electrophoretic gel for use in vertical gel electrophoresis comprising:

first and second substantially planar vertical wall members;

spacer means adapted to position the first and second wall members in opposed orientation so as to define between opposed inner faces of the wall members a gel-receiving space having open upper and lower ends and closed lateral sides, wherein the spacer means includes at least one primary spacing element located on an inner face and adjacent to each lateral edge of the wall member, wherein the primary spacing element includes ridges on one wall member and corresponding channels on the other wall member, and wherein the ridges and channels are adapted so that the ridges are receivable within the channels; and

locking means, including at least one male member projecting from each side of one of the wall members and at least one complementary receiving member adjacent each side of the other wall member adapted to receive said male members, wherein said corresponding male members and receiving members are adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit.

31. (Original) The cassette according to claim 30, wherein the locking means includes two male members projecting from each side of one of the wall members and two complementary receiving members adjacent each side of the other wall member.

32. (Cancelled)

33. (Original) The cassette according to claim 30, wherein each male member is an L-shaped member projecting from at or near each lateral edge of one of the wall members and each receiving member is a complementary ridge, indent or surface of the other wall member adapted so that a portion of each L-shaped member clamps over each complementary ridge, indent or surface of the other wall member.

34. (Original) The cassette according to claim 33 wherein the male members are integrally formed parts of the wall members.

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Currently Amended) The cassette according to claim 30 [[36]], wherein the primary spacing elements are adapted to effect closure of the lateral sides of the gel-receiving space.

39. (Original) The cassette according to claim 38, wherein the primary spacing elements consist of cooperating ridges and channels extending along substantially the entire length of the wall members adjacent said lateral edges.

40. (Currently Amended) The cassette according to claim 30 [[36]], wherein the spacer means further includes one or more secondary spacing elements located intermediate the lateral edges.

41. (Original) The cassette according to claim 40, wherein the one or more secondary spacing elements are adapted to maintain the predetermined distance between the opposed inner faces.

42. (Original) The cassette according to claim 41, wherein the one or more secondary spacing elements are positioned near the upper end of the gel-receiving space.

43. (Original) The cassette according to claim 40, wherein each secondary spacing element consists of a boss or knob on one inner face and a complementary mouth on the opposed inner face adapted to receive the boss or knob.

44. (Original) The cassette according to claim 30, wherein the inner face of one of the wall members includes one or more of short longitudinal ribs adjacent to an upper end of the wall member.

45. (Original) The cassette according to claim 44, wherein the one or more short ribs are adapted so that, when the first and second walls members are engaged, the short ribs define a plurality of parallel channels suitable for receiving a well-forming cone or spacer.
46. (Original) The cassette according to claim 45, wherein the one or more short ribs are adapted so as to extend fully between the opposed inner faces of the first and second wall members when the members are in locked engagement.
47. (Original) The cassette according to claim 45, wherein the one or more short ribs are adapted so as to extend only partly between said inner faces when in locked engagement, so as to define a channelled gel-receiving cavity.
48. (Original) The cassette according to claim 44, wherein the one or more short ribs are separated by substantially equal distances.
49. (Original) The cassette according to claim 44, wherein the cassette is adapted so that, when filled with gel, the short ribs cause gel fingers to be formed within the gel-receiving cavity and cause sample-receiving wells to be formed on top of the gel fingers.
50. (Original) The cassette according to claim 30, further comprising:
  - locating means for positioning a removable buffer chamber on the upper end of the cassette; and
  - a removable elongated buffer chamber adapted to be positioned on the upper end of the cassette.
51. (Original) The cassette according to claim 50, wherein the locating means is formed as extensions or prongs on each lateral side of the cassette extending above the upper end of the cassette.
52. (Original) The cassette according to claim 51, wherein the buffer chamber has side walls and end walls forming a buffer receiving chamber, an open upper end and a lower closed end having a cavity positioned therein adapted to be sealably located on the upper end of the cassette.

53. (Original) The cassette according to claim 52, wherein the buffer chamber has corresponding receiving portions on outer surfaces of the end walls to engage with the extensions or prongs.

54. (Original) The cassette according to claim 30 further comprising:

gel material formed in the gel-receiving space defining at least two wells in the upper end of the gel, one of the two wells being relatively larger and the other one well being relatively smaller;

a narrow wall or finger separating the relatively smaller well from the larger well wherein the wall or finger is at least partially defined by the gel material forming the slab; and

a removable plug located in the smaller well.

55. (Cancelled)

56. (Original) A method for making a pre-cast electrophoresis gel for vertical gel electrophoresis comprising:

providing a vertical cassette according to claim 30;

placing a comb or at least one spacer in the top of the cassette;

pouring a gel-forming material into the cassette;

allowing the gel forming material to polymerise or set; and

removing the comb or spacer.

57. (Cancelled)

58. (Original) A method for making a pre-cast electrophoresis gel for 2-D vertical gel electrophoresis comprising:

providing a vertical cassette according to claim 30;

placing a comb having two space-defining projections in the top of the cassette, wherein one projection is relatively wider than the other projection;

pouring a gel-forming material into the cassette;

allowing the gel forming material to polymerise or set;  
removing the comb or spacer to form a relatively wider well and a relatively smaller well;  
and  
placing a removable plug in the relatively smaller well.

59. (Cancelled)

60. (Original) A method for making a pre-cast electrophoresis gel for 2-D vertical gel electrophoresis comprising:

providing a vertical cassette comprising first and second substantially planar vertical wall members; spacer means adapted to position the first and second wall members in opposed orientation so as to define between opposed inner faces of the wall members a gel-receiving space having open upper and lower ends and closed lateral sides; and locking means, including at least one male member projecting from each side of one of the wall members and at least one complementary receiving member adjacent each side of the other wall member adapted to receive said male members, wherein said corresponding male members and receiving members are adapted not to effect locked engagement of the first and second wall members unless opposed inner faces of said wall members lie in parallel planes separated by a predetermined distance, wherein the male members and the receiving members are adapted to effect engagement by a snap-fit;

placing a comb having two space-defining projections in the top of the cassette, wherein one projection is relatively wider than the other projection;

pouring a gel-forming material into the cassette;

allowing the gel forming material to polymerise or set;

removing the comb or spacer to form a relatively wider well and a relatively smaller well; and

placing a removable plug in the relatively smaller well.

61. (Original) A method for preparing a pre-cast electrophoresis gel for vertical gel electrophoresis comprising:

inserting at least one spacer into the top of a cassette for vertical electrophoresis gels, the cassette comprising:

a first vertical planar wall member having inner and outer surfaces, top and bottom edges, and bottom edges and lateral edges;

a second vertical planar wall member having inner and outer surfaces, top and back edges, and lateral edges, wherein the first and second wall members are oriented generally parallel to each other and such that the inner wall of the first wall member is proximate to the inner wall of the second wall member;

spacing means disposed between the inner walls of the first and second wall members and adapted to provide a space for an electrophoresis gel between the inner walls of the first and second wall members, wherein the cassette has an interior which is defined by the space between the first wall member and the second wall member; and

locking means adapted to prevent locking engagement of the first and second wall members unless the inner surface of the first wall member and the inner surface of the second wall member are substantially parallel to each other and are separated by a predetermined distance and, when the first and second wall members are in locked engagement, to substantially prevent any movement of the wall members away from such locked engagement;

wherein the spacer comprises a protrusion projecting from the side of the spacer proximate the interior of the cassette, wherein such protrusion defines two wells within the interior of the cassette, and wherein one of the wells is larger than the other well;

providing a gel-forming material into the interior of the cassette;

allowing the gel-forming material to form a gel within the interior of the cassette;

removing the spacer from the cassette; and

inserting a removable plug in the smaller well.